

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of

A. SANADA et al

Serial No.

Filed: November 16, 2001

For: METHOD AND APPARATUS FOR RENTAL
STORAGE SYSTEM

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-identified application as follows:

IN THE SPECIFICATION

Page 1, the first full paragraph, lines 5 to 9, replace the paragraph with:

The present invention relates to a storage system, more specifically, to a charging method based on the used volume of the storage system, the reduced initial investment for a storage system, and easy volume addition of the storage system, and to a storage system for realizing the charging method.

Page 8, the first full paragraph, lines 7-14, replace the paragraph with:

The management part 14 of the storage system 10 has a table for managing on-demand flag information. The on-demand

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flag is reset so as to increase the usable volume. The owner of the storage system 10 uses the operation part 15 at shipment of the system to set an on-demand flag on a given logical volume basis to the disk drive 12 and rents the system 10. The management unit is not limited to the logical volume, and may be an RAID group, a physical volume, or an address.

Pages 8 and 9, the paragraph bridging page 8, line 18 through page 9, line 2, replace the paragraph with:

In the on-demand volume, all the logical volumes to which the on-demand flags are set are managed. The on-demand flag attributes are all "Set" at shipment, and are recorded into the management table as "Reset" when the flag is reset. Once this flag is reset, the initial state cannot be returned. When the flag is reset, the reset date and time to the second are recorded into the management table. Items managed by the table may be volume numbers in place of the on-demand volume, or may include identification information inherent to the user and system use periods.

Pages 15 and 16, the paragraph bridging page 15, line 23 through page 16, line 9, replace the paragraph with:

The user orders to the owner of the storage system a storage system having a total volume of 2TB of the initial introduction volume 1TB and the added volume 1TB for the next 6 months. The owner who has received the order ships a system

of the construction for setup and rents it to the user. At this time, the owner constructs and sets the system so that the user automatically notifies the user starting of the added volume. For rental, the storage system includes, not only a disk drive, but also hardware required for the next 6 months (a disk drive, a housing mounting the disk drive, a cache memory and other components to construct the storage system such as a storage medium, a controller, a host interface, a relay between the storage systems). (STEP S2)

Page 18, the fourth full paragraph, lines 19-24, replace the paragraph with:

The disk volume is described above as an example. The cache volume and other components to construct the storage system (a housing mounting the disk drive, a storage medium constructing the storage system, a controller, a host interface, and a relay between the storage systems) are reviewed on the fixed period basis and are added for reflection on the charged cost.

REMARKS

Examination is requested.

Respectfully submitted,



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(703) 684-1120
Date: November 16, 2001

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**MARKED UP VERSION OF REPLACED
PARAGRAPH(S) OF THE SPECIFICATION**

Page 1, first full paragraph (lines 5-9), the marked up paragraph is as follows:

The present invention relates to a storage system, more specifically, to a charging method based on the used volume of the storage system, the reduced initial investment for a storage system, and easy volume addition of the storage system, [and the used volume of the storage system,] and to a storage system for realizing the charging method.

Page 8, the first full paragraph, (lines 7-14), the marked up paragraph is as follows:

The management part 14 of the storage system 10 has a table for managing on-demand flag information. The on-demand flag is reset so as to increase the usable volume. The owner of the storage system 10 uses the operation part 15 at shipment of the system to set an on-demand flag on a given logical volume basis to the disk drive 12 and rents the system 10. The management unit is not limited to the logical [logic] volume, and may be an RAID group, a physical volume, or an address.

Pages 8 and 9, the paragraph bridging page 8, line 18 through page 9, line 2, the marked up paragraph is as follows:

In the on-demand volume, all the logical [logic] volumes to which the on-demand flags are set are managed. The on-demand flag attributes are all "Set" at shipment, and are recorded into the management table as "Reset" when the flag is reset. Once this flag is reset, the initial state cannot be returned. When the flag is reset, the reset date and time to the second are recorded into the management table. Items managed by the table may be volume numbers in place of the on-demand volume, or may include identification information inherent to the user and system use periods.

Pages 15 and 16, the paragraph bridging page 15, line 23 through page 16, line 9, the marked up paragraph is as follows:

The user orders to the owner of the storage system a storage system having a total volume of 2TB of the initial introduction volume 1TB and the added volume 1TB for the next 6 months. The owner who has received the order ships a system of the construction for setup and rents it to the user. At this time, the owner constructs and sets the system so that the user automatically notifies the user starting of the added volume. For rental, the storage system includes, not only a disk drive, but also hardware required for the next 6 months (a disk drive, a housing mounting the disk drive, a cache memory and other components to construct the storage system such as [,] a storage medium [to construct the storage system],

a controller, a host interface, a relay between the storage systems). (STEP S2)

Page 18, the fourth full paragraph, (lines 19-24), the marked up paragraph is as follows:

The disk volume is described above as an example. The cache volume and other components [elements] to construct the storage system (a housing mounting the disk drive, a storage medium constructing the storage system, a controller, a host interface, and a relay between the storage systems) are reviewed on the fixed period basis and are added for reflection on the charged cost.

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For: METHOD AND APPARATUS FOR RENTAL
STORAGE SYSTEM**REQUEST FOR APPROVAL OF PROPOSED DRAWING CORRECTIONS**Commissioner of Patents
Washington, D.C. 20231

Sir:

The applicants request approval of the proposed drawing corrections shown in red ink on the attached copies of Figs. 1, 6 and 9.

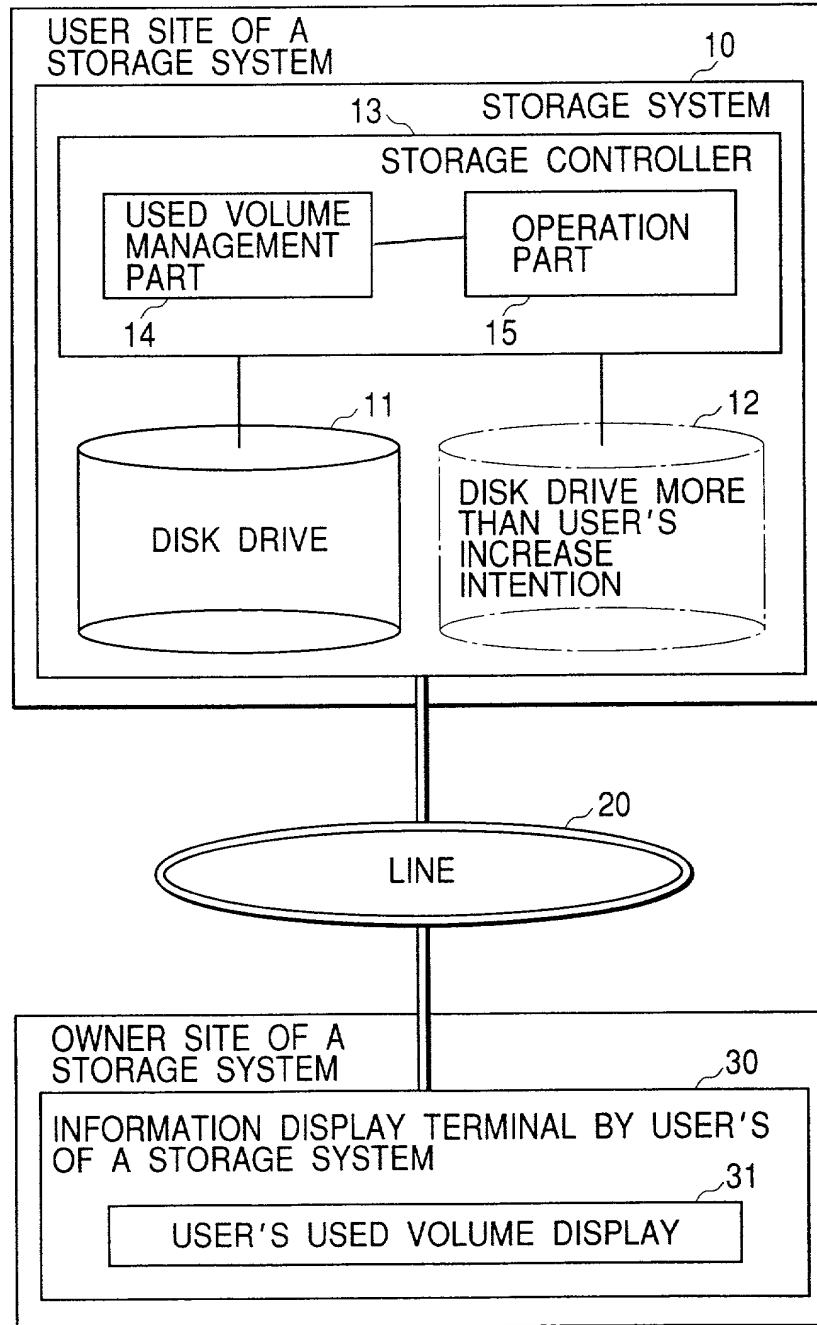
Respectfully submitted,

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FIG. 1

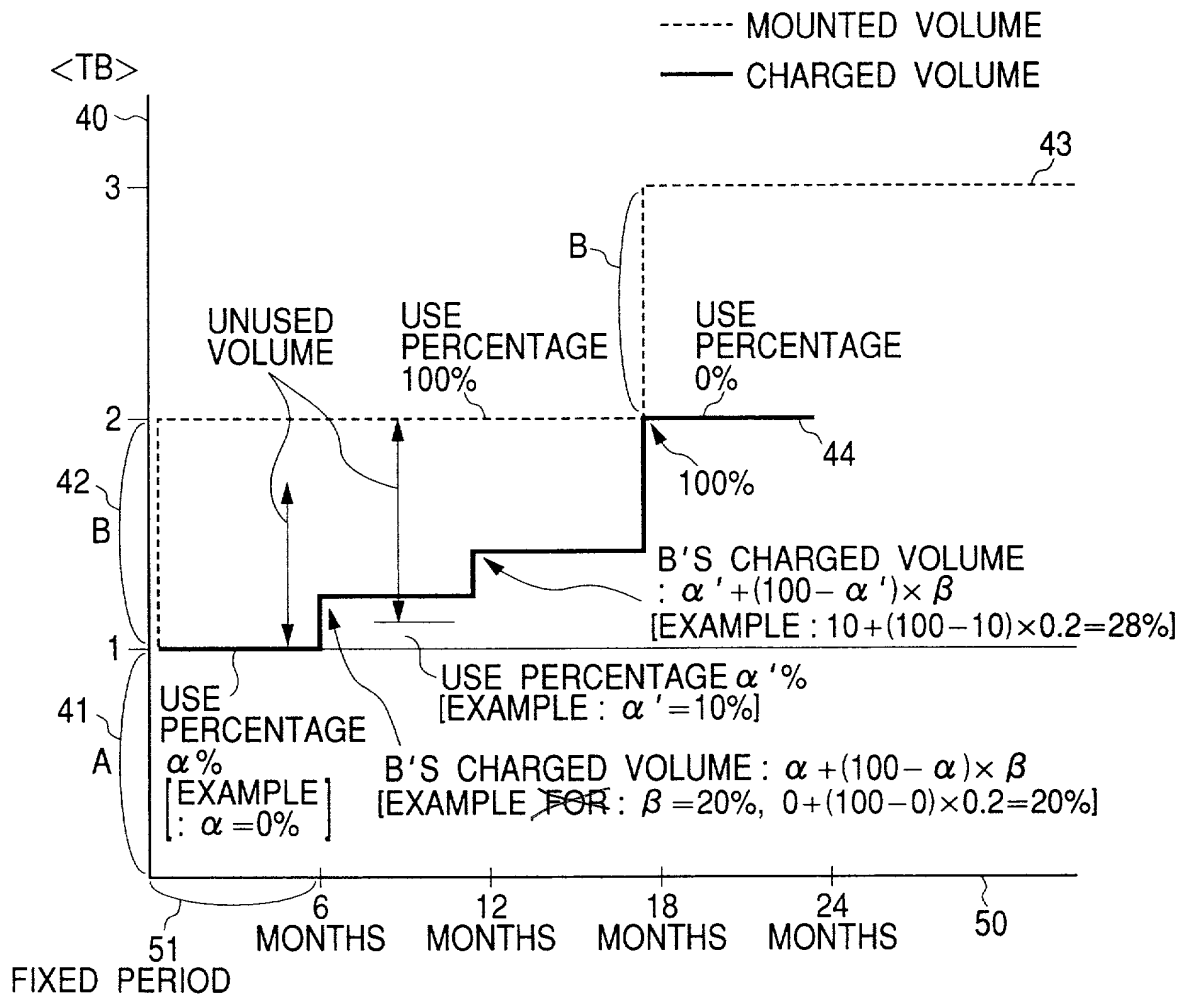
CHARGING SYSTEM OVERVIEW OF A
STORAGE SYSTEM



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FIG. 6

CHARGED VOLUME TRANSITION DIAGRAM TO THE
DISK VOLUME OF A STORAGE SYSTEM



DECISION OF A "USED VOLUME" AND AN "UNUSED VOLUME"
AFTER 6 MONTHS ELAPSE
A TOTAL CHARGED VOLUME FOR THE NEXT 6 MONTHS IS
A+B USED VOLUME+
(B'S UNUSED VOLUME \times CHARGING PERCENTAGE β %)

FIG. 9 PRIOR ART

INITIAL INVESTED VOLUMES TO A STORAGE SYSTEM

